AD-A102 789 ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/G 4/2
19313A MLRS, MISSILE NUMBERS BC-006, BC-007, ROUND NUMBER V-160--ETC(U)
JUN 81

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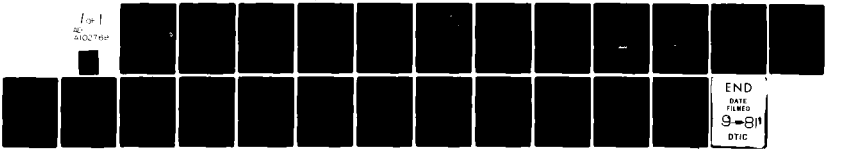

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METEOROLOGICAL DATA REPORT

19313A MLRS
Missile Numbers BC-006, BC-007
Round Numbers V-160/MD-27, V-161/MD-28
30 June 1981

by

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ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO

ECOM
UNITED STATES ARMY ELECTRONICS COMMAND

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11. CONTROLLING OFFICE NAME AND ADDRESS US Army Electronics Research & Development Cmd Atmospheric Sciences Laboratory White Sands Missile Range, New Mexico 88002		12. REPORT DATE June 1981 13. NUMBER OF PAGES 24
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Meteorological data gathered for the launching of the 19313A MLRS, Missile No. BC-006 and BC-007, Round No. V-160/MD-27 and V-161/MD-28 presented in tabular form.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

CONTENTS

INTRODUCTION

19313A MLRS, Missile Numbers BC-006 and BC-007, Round Numbers V-160/MD-27 and V-161/MD-28, were launched from Tula Gate, White Sands Missile Range (WSMR), New Mexico, at 1507:02 and 1507:06 MDT, 30 June 1981. The scheduled launch times were 1500 and 1500:04.5 MDT.

DISCUSSION

Meteorological data were recorded and reduced by the White Sands meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

1. Observations:

a. Surface

(1) Standard surface observations to include pressure, temperature ($^{\circ}C$), relative humidity, dew point ($^{\circ}C$), density (gm/m^3), wind direction and speed, and cloud cover were made at the Tula Gate Met Site at T-0 minutes.

(2) Anemometer data were provided from tower-mounted anemometer at Tula Gate. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

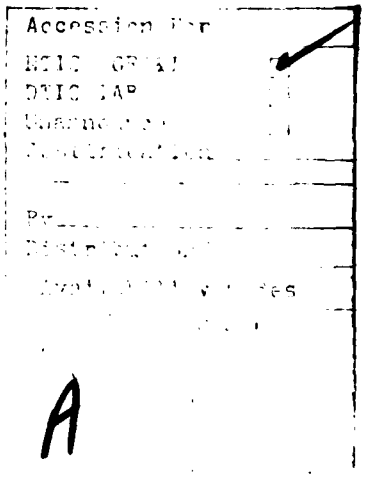
b. Upper Air:

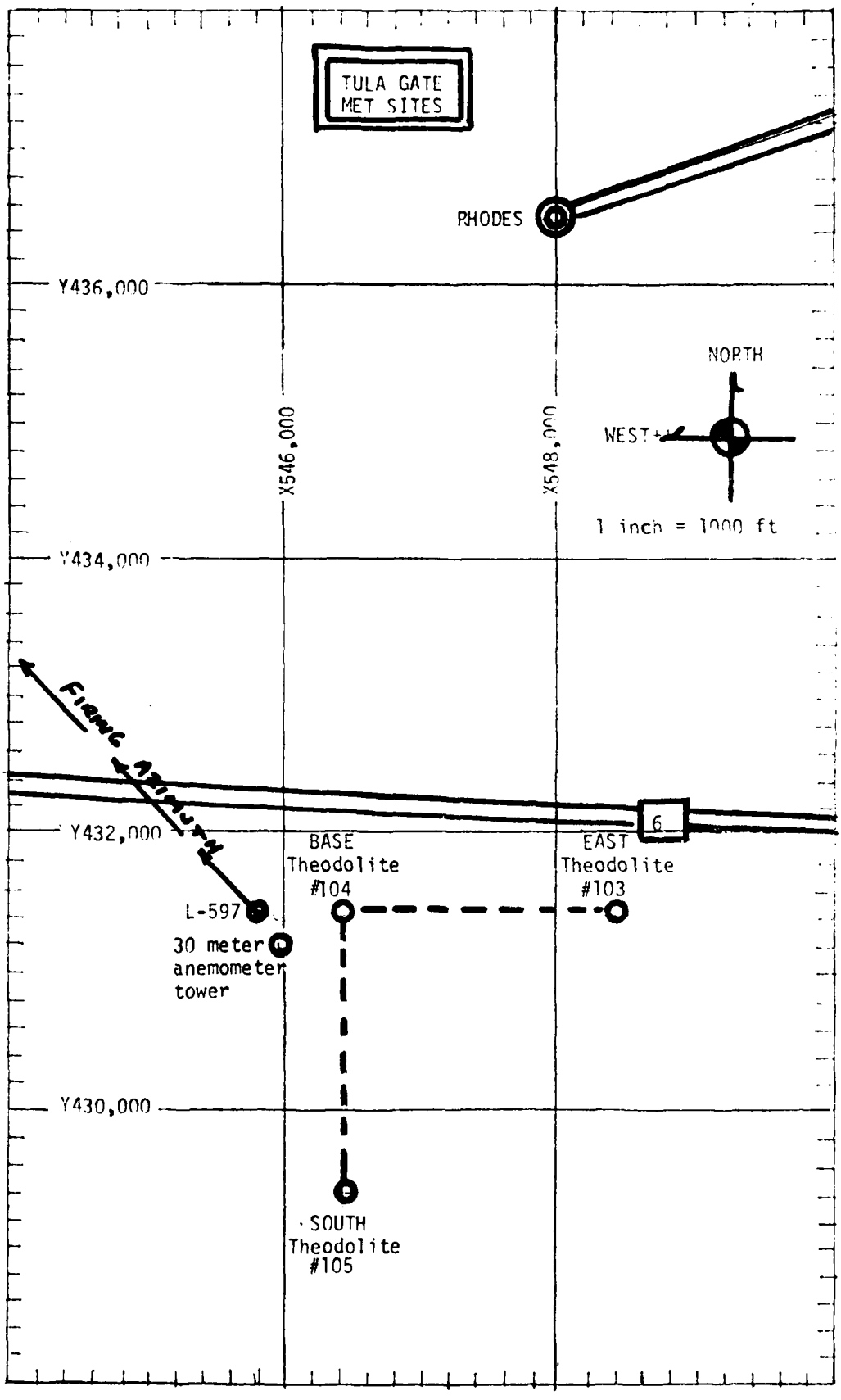
(1) Low level wind data were obtained from Double Theodolite pibal observations at:

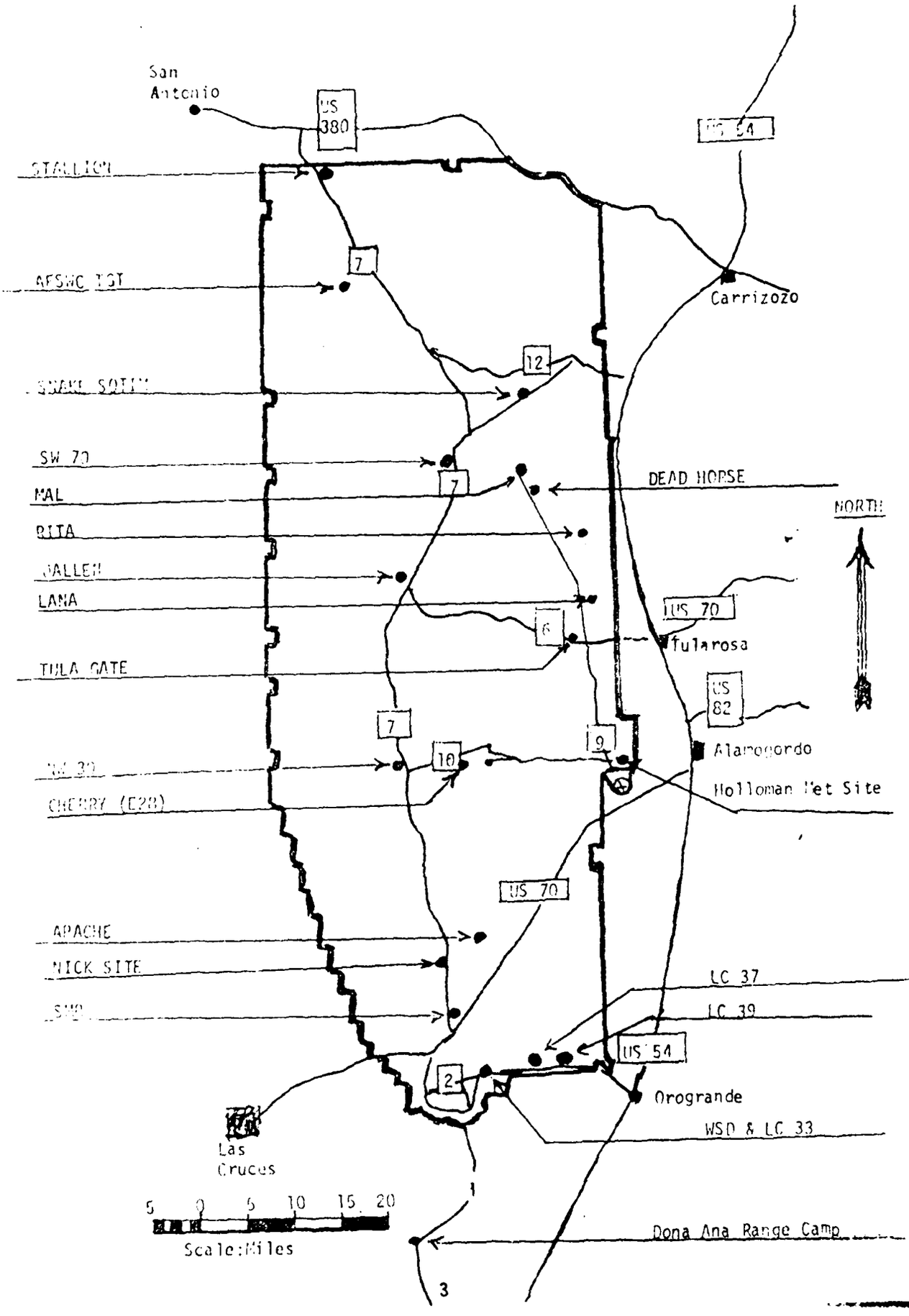
SITE AND ALTITUDE	
Tula Gate	2 KM
MAL	2 KM

(2) Air structure data (rawinsonde) were collected at the following Met Sites:

SITE AND TIME	
LANA	1230 MDT
RITA	1325 MDT
LANA	1600 MDT




TULA GATE
MET SITES
PHODES
Y436,000
X546,000
X548,000
NORTH
WEST
1 inch = 1000 ft
Y434,000
FIRING AZIMUTH
Y432,000
6
BASE
Theodolite
#104
EAST
Theodolite
#103
L-597
30 meter
anemometer
tower
Y430,000
SOUTH
Theodolite
#105


San Antonio
US 380
US 54
STALLION
AFSWC TGT
Carrizozo
12
SNAKE SOUTH
SW 70
7
DEAD HORSE
MAL
RITA
JALLEN
LANA
NORTH
US 70
6
Tularosa
TULA GATE
US 82
7
9
10
Alamogordo
SW 32
Holloman Met Site
CHERRY (E28)
US 70
APACHE
NICK SITE
LC 37
SW9
LC 39
US 54
2
Orogrande
WSD & LC 33
Las Cruces
5 0 5 10 15 20
Scale:Miles
Dona Ana Range Camp
3

PROJECT SURFACE OBSERVATION

TABLE 1

STATION TULA GATE

DATE 30 (DAY) JUNE (MONTH) 1981 (YEAR)

X= 545,944.89 Y= 431,158.70 H= 4102.5

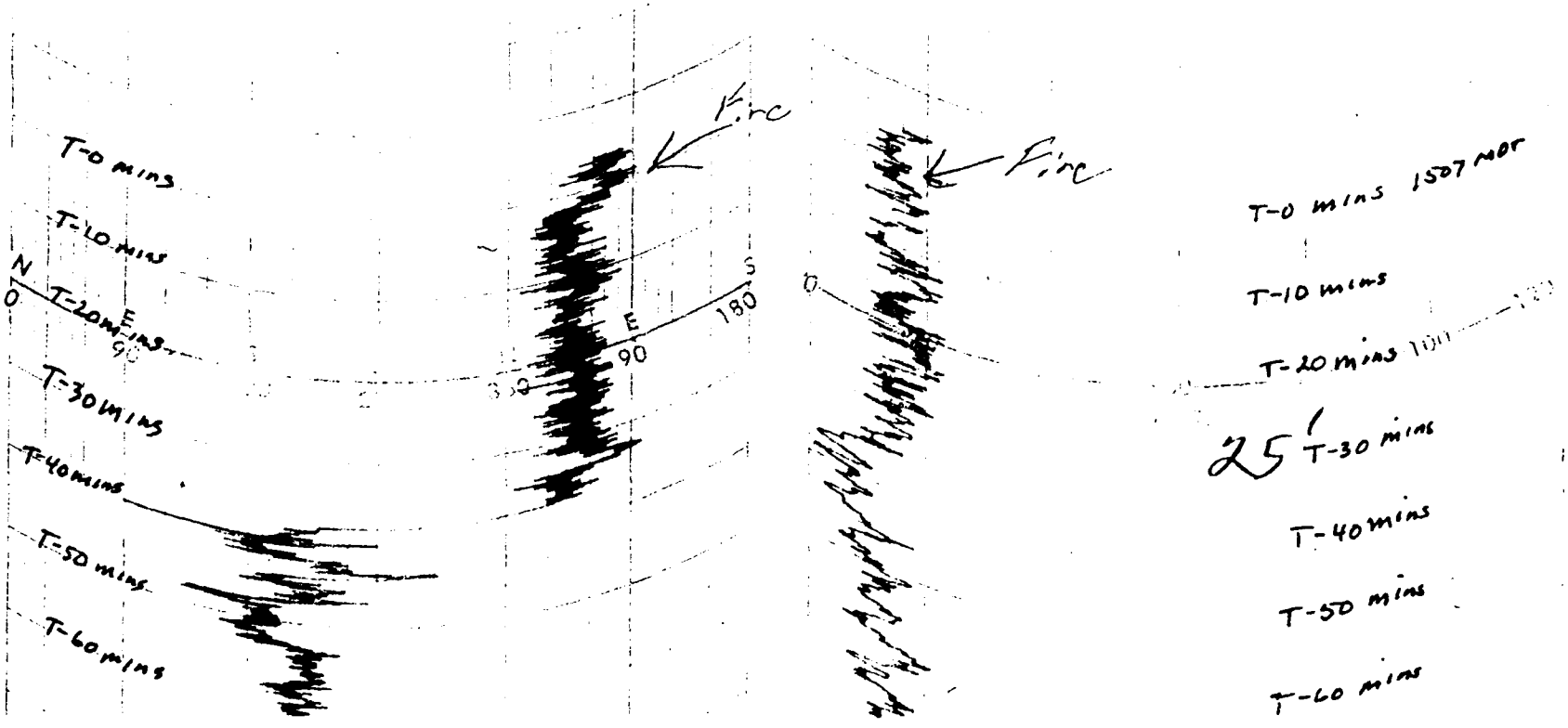
TIME MDT	PRESSURE mbs	TEMPERATURE °F	TEMPERATURE °C	DEW POINT °F	DEW POINT °C	RELATIVE HUMIDITY %	DENSITY gm/m³	WIND DIRECTION degs Tn	WIND SPEED kts	WIND CHARACTER kts	VISIBILITY
1507	874.9		29.4		17.3	48	997	050	14	G24	30

OBSTRUCTIONS TO VISIBILITY	CLOUDS 1st LAYER AMT	1st LAYER TYPE	1st LAYER HGT	2nd LAYER AMT	2nd LAYER TYPE	2nd LAYER HGT	3rd LAYER AMT	3rd LAYER TYPE	3rd LAYER HGT	REMARKS
	6	CU	6000	2	AC	12000				

PSYCHROMETRIC COMPUTATION

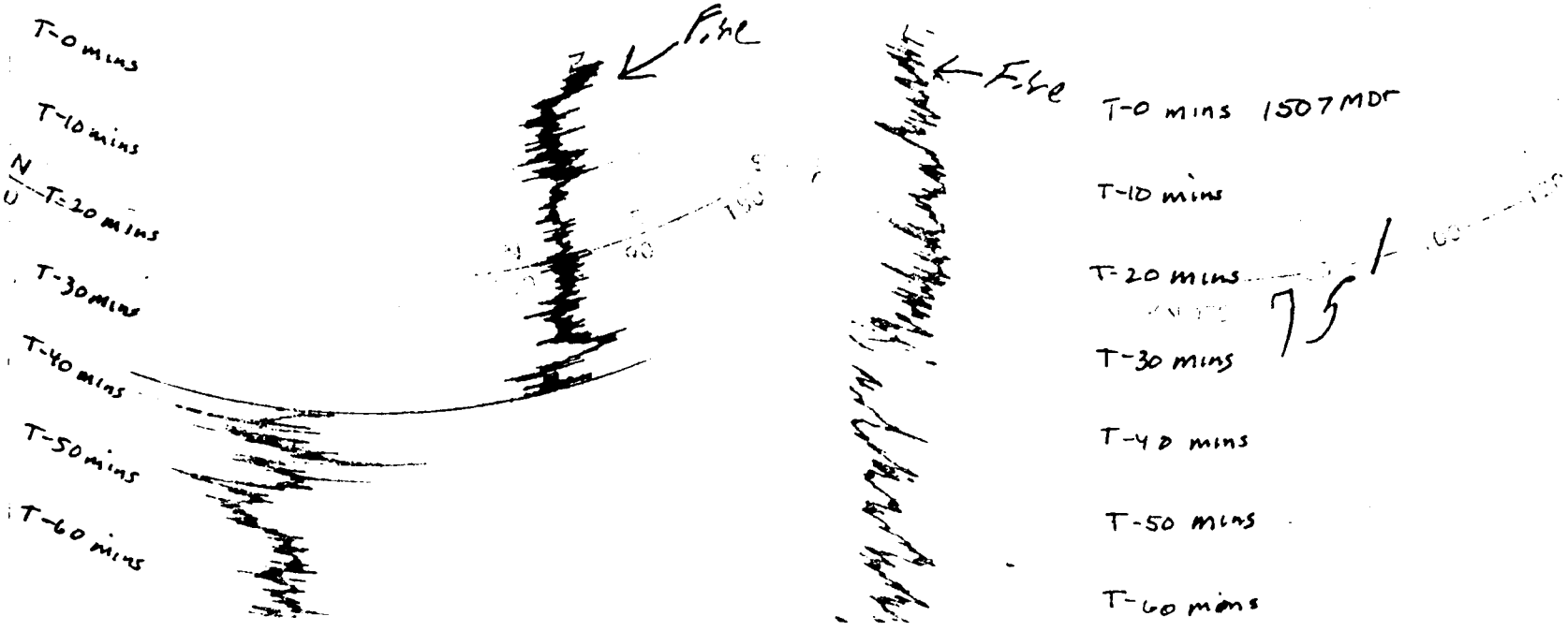
TIME: MDT	1507		
DRY BULB TEMP.	29.4		
WET BULB TEMP.	20.9		
WET BULB DEPR.	8.5		
DEW POINT	17.3		
RELATIVE HUMID.	48		

TABLE: 2



Anemometer data from anemometer mounted 25 feet above ground level; WSTM X-545,944.89 Y-431,158.70

TABLE: 3



Anemometer data from anemometer mounted 75 feet above ground level: UTM X-545,244.89 Y-431,158.70

TABLE 4

T-TIME PILOT-BALLOON MEASURED WIND DATA

DATE 30 June 1981

SITE: Tula Gate
TIME: 1507 MDT
WSTM COORDINATES:
X= 546,402.29
Y= 431,426.23
H= 4,105.86

SITE: MAL
TIME: 1507 MDT
WSTM COORDINATES:
X= 509,421.05
Y= 495,563.18
H= 4,126.80

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	050	12
150	047	19
210	049	17
270	051	14
330	051	12
390	051	10
500	051	06
650	M I S G	
800	M I S G	
950	M I S G	
1150	M I S G	
1350	M I S G	
1550	M I S G	
1750	M I S G	
2000	M I S G	

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	050	12
150	073	16
210	079	14
270	088	10
330	105	06
390	112	06
500	129	05
650	M I S G	
800	M I S G	
950	M I S G	
1150	M I S G	
1350	M I S G	
1550	M I S G	
1750	M I S G	
2000	M I S G	

Data obtained from Double Theodolite Tracking Pilot-Balloon Observation.

All data is doudtful, but may be used as an indicator of the general flow.

TABLE 5

AIMING AND T-TIME COMPUTER MET MESSAGES
30 June 1981

LANA 1230 MDT
METCM1331062
301850127875

00320005	30480875
01355009	30140865
02344014	29860841
03392013	29510803
04344014	29050758
05300018	28640714
06293017	28430673
07294010	28090633
08297018	27760596
09263015	27420560
10274009	27220526
11288007	26980494
12213008	26540449

RITA 1325 MDT
METCM1334061
301940128875

00480007	30490875
01353010	30280865
02346015	29880841
03324014	29520803
04325015	29060758
05306016	28630715
06297017	28320673
07262014	27990634
08291015	27640596
09287014	27400560
10275012	27150526
11260013	26800494
12276009	26390449

LANA 1600 MDT
METCM1331062
302200127874

00107013	30160874
01177015	29820864
02129014	29600839
03344005	29340801
04358013	28960756
05313017	28630712
06300016	28270671
07313015	29750631
08323015	27720594
09327016	27520558
10324017	27430525
11319015	27030493
12298010	26380443

SIGNIFICANT LEVEL DATA

STATION ALTITUDE 4173.44 FEET MSL
30 JUNE 81 1230 HRS MDT
ASCENSION NO. 1

1810320001
LANA

GEODETIC COORDINATES
33.13510 LAT DEG
106.15446 LON DEG

TABLE 6

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT
875.0	4173.4	28.9	16.9	55.0
865.4	4494.9	25.6	14.4	50.0
850.0	5013.3	24.1	14.5	55.0
803.8	6611.2	19.7	13.6	68.0
754.4	8396.0	14.6	13.1	91.0
721.8	9620.6	11.2	10.1	93.0
707.0	10191.4	11.7	7.4	75.0
700.0	10465.5	11.4	6.9	74.0
679.0	11302.4	10.1	7.2	82.0
638.8	12964.9	6.8	2.5	74.0
597.8	14724.9	-3.7	-7.3	76.0
585.4	15271.8	-2.0	-5.7	88.0
546.0	17100.1	-1.0	-5.4	84.0
542.8	17254.8	-.5	-4.5	74.0
500.0	19404.9	-3.6	-9.8	62.0
493.4	19750.6	-3.6	-11.3	55.0
471.8	20910.6	-5.6	-15.9	44.0
456.9	21786.3	-7.7	-17.3	46.0
432.2	23154.1	-9.6	-19.0	46.0
421.8	23771.2	-11.4	-19.9	49.0
409.6	24510.9	-12.4	-21.8	45.0
402.4	24956.0	-13.5	-19.8	59.0
400.0	25105.8	-13.7	-21.0	54.0
385.0	26059.0	-15.6	-25.6	50.0
363.8	27460.3	-17.7	-28.5	38.0
350.0	28409.1	-19.9	-28.5	46.0
332.4	29661.5	-23.1	-34.0	36.0
316.6	30832.0	-24.8	-39.1	25.0
300.0	32112.5	-28.5	-40.6	30.0
274.4	34196.3	-33.4	-49.0	19.0
258.0	35610.7	-37.1		
250.0	36325.4	-38.3		
200.0	41232.8	-51.7		
194.0	41882.2	-52.8		

UPPER AIR DATA

STATION ALTITUDE 4173.44 FEET MSL
30 JUNE 31 1230 HRS MDT
ASCENSION NO. 1

18103200Z
LANA

GEODETIC COORDINATES
33.13510 LAT DEG
106.15446 LON DEG

TABLE 7

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
4173.4	875.0	28.9	18.9	55.0	999.6	680.3	160.0	5.1	1.000314
4500.0	865.2	25.6	14.4	50.0	1001.7	675.8	190.1	5.8	1.000293
5000.0	850.4	24.1	14.5	54.9	989.2	674.2	200.7	7.3	1.000291
5500.0	835.7	22.8	14.3	59.0	976.5	672.6	207.7	8.9	1.000288
6000.0	821.2	21.4	14.1	63.0	964.1	671.1	212.5	10.6	1.000285
6500.0	806.9	20.0	13.7	67.1	951.8	669.5	214.5	12.2	1.000281
7000.0	792.8	18.6	13.7	73.0	939.6	667.9	209.3	12.9	1.000279
7500.0	778.8	17.2	13.6	79.5	927.5	666.3	204.8	13.8	1.000277
8000.0	765.1	15.7	13.4	85.9	915.6	664.7	199.1	14.6	1.000274
8500.0	751.6	14.3	12.9	91.2	904.0	663.0	188.2	15.2	1.000270
9000.0	738.1	12.9	11.7	92.0	892.5	661.3	178.5	16.3	1.000262
9500.0	724.9	11.5	10.4	92.8	881.3	659.5	172.9	17.5	1.000255
10000.0	711.9	11.5	8.4	81.0	869.1	659.3	168.3	18.7	1.000245
10500.0	699.1	11.3	7.0	74.3	851.4	658.9	166.0	18.2	1.000237
11000.0	686.5	10.6	7.1	79.1	838.2	658.0	164.3	17.2	1.000234
11500.0	674.1	9.7	6.6	81.0	825.7	657.0	163.7	14.8	1.000230
12000.0	661.8	8.7	5.2	78.6	813.8	655.7	163.8	11.9	1.000224
12500.0	649.8	7.7	3.8	76.2	802.2	654.4	162.5	10.4	1.000217
13000.0	638.0	6.6	2.3	74.0	791.1	653.0	159.6	9.9	1.000211
13500.0	626.0	3.6	-.5	74.6	785.2	649.3	157.4	10.5	1.000204
14000.0	614.4	.6	-3.3	75.2	779.4	645.6	157.6	13.3	1.000198
14500.0	602.9	-2.4	-6.0	75.7	773.7	641.9	157.7	15.9	1.000192
15000.0	591.5	-2.8	-5.5	82.0	760.4	641.3	157.7	18.2	1.000190
15500.0	580.3	-1.9	-3.7	87.5	746.0	642.6	154.9	18.1	1.000190
16000.0	569.4	-1.6	-3.6	86.4	728.2	643.0	150.4	17.0	1.000186
16500.0	558.6	-1.3	-3.5	85.3	713.6	643.3	149.2	14.6	1.000183
17000.0	548.1	-1.1	-3.4	84.2	699.4	643.7	148.5	12.0	1.000180
17500.0	537.7	-.9	-5.1	72.6	685.9	643.8	151.6	10.3	1.000174
18000.0	527.6	-1.6	-6.3	69.8	674.9	642.9	155.7	8.7	1.000170
18500.0	517.6	-2.3	-7.6	67.1	664.0	642.0	152.7	7.9	1.000166
19000.0	507.8	-3.0	-8.8	64.3	653.3	641.1	148.6	7.3	1.000162
19500.0	498.2	-3.6	-10.2	60.1	642.5	640.3	137.8	7.5	1.000158
20000.0	488.7	-4.0	-12.3	52.6	631.4	639.7	128.9	7.7	1.000153
20500.0	479.3	-4.9	-14.2	47.9	621.5	638.8	121.7	7.5	1.000149
21000.0	470.2	-5.8	-16.0	44.2	611.8	637.4	116.3	7.2	1.000146
21500.0	461.1	-7.0	-16.3	45.3	602.8	636.0	114.7	6.5	1.000143
22000.0	452.2	-8.0	-17.5	46.0	593.3	634.8	114.2	6.2	1.000140
22500.0	443.4	-8.7	-18.2	46.0	583.4	633.9	115.3	6.3	1.000138
23000.0	434.8	-9.4	-18.8	46.0	573.6	633.1	114.1	6.3	1.000135
23500.0	426.3	-10.6	-19.5	47.7	565.1	631.6	110.9	6.3	1.000133

STATION ALTITUDE 4173.44 FEET MSL
30 JUNE 81 1230 HRS MDT
ASCENSION NO. 1

UPPER AIR DATA
181032U001
LANA

GEODETIC COORDINATES
33.13510 LAT DEG
106.15446 LON DEG

TABLE 7 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
24000.0	416.0	-11.7	-20.5	47.8	556.4	630.3	111.9	6.1	1.000131
24500.0	409.8	-12.4	-21.8	45.1	548.9	629.4	115.0	6.0	1.000128
25000.0	403.7	-13.6	-20.1	57.5	538.4	628.0	124.3	6.0	1.000127
25500.0	397.7	-14.5	-22.1	52.3	529.7	626.9	134.4	6.2	1.000124
26000.0	391.9	-15.5	-23.4	50.2	521.3	625.6	149.2	6.2	1.000121
26500.0	386.2	-16.3	-25.1	46.2	512.5	624.7	164.3	6.5	1.000119
27000.0	380.6	-17.0	-26.8	41.9	505.7	623.7	171.1	7.1	1.000116
27500.0	375.2	-17.8	-28.5	38.3	495.2	622.7	171.4	8.0	1.000114
28000.0	369.9	-19.0	-28.5	42.6	487.4	621.3	164.0	9.5	1.000112
28500.0	364.7	-20.1	-28.9	45.3	479.8	619.9	159.6	11.7	1.000110
29000.0	359.6	-21.4	-31.0	41.3	472.5	618.3	157.3	13.9	1.000108
29500.0	354.6	-22.7	-33.2	37.3	465.2	616.7	154.4	14.2	1.000106
30000.0	349.8	-23.6	-35.3	32.8	457.4	615.5	151.5	14.1	1.000104
30500.0	345.0	-24.3	-37.5	28.1	449.3	614.6	147.7	13.1	1.000102
31000.0	340.4	-25.3	-39.2	25.7	441.7	613.4	146.9	12.3	1.000100
31500.0	335.8	-26.7	-39.8	27.6	435.1	611.6	148.4	11.5	1.000098
32000.0	331.4	-28.2	-40.4	29.6	428.5	609.8	150.6	11.0	1.000097
32500.0	326.1	-29.4	-42.0	28.0	421.6	608.3	152.4	10.7	1.000095
33000.0	320.8	-30.6	-44.0	25.3	414.7	606.8	152.1	10.7	1.000093
33500.0	282.7	-31.8	-46.0	22.7	407.9	605.3	153.6	10.5	1.000091
34000.0	270.7	-32.9	-48.1	20.0	401.3	603.8	156.9	10.1	1.000090
34500.0	270.8	-34.2	-51.7	14.9**	394.8	602.2	160.8	9.3	1.000088
35000.0	265.0	-35.5	-57.6	8.2**	388.4	600.6	165.6	8.8	1.000087
35500.0	259.2	-36.8	-71.0	1.5**	382.1	598.9	170.9	9.4	1.000085
36000.0	253.6	-38.0			375.8	597.4	175.2	10.3	1.000084
36500.0	248.0	-39.3			369.4	595.8	178.5	11.4	1.000082
37000.0	242.4	-40.6			363.2	594.1	177.9	12.1	1.000081
37500.0	237.0	-41.9			357.0	592.4	175.4	12.6	1.000080
38000.0	231.7	-43.2			351.0	590.8	170.8	13.0	1.000078
38500.0	226.5	-44.5			345.1	589.1	165.7	13.6	1.000077
39000.0	221.4	-45.8			339.3	587.4	163.7	14.1	1.000076
39500.0	216.4	-47.1			333.6	585.7	162.3	14.7	1.000074
40000.0	211.5	-48.5			328.0	584.0	165.0	15.0	1.000073
40500.0	206.8	-49.8			322.5	582.3			1.000072
41000.0	202.1	-51.1			317.1	580.5			1.000071
41500.0	197.5	-52.2			311.3	579.1			1.000069

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4173.44 FEET MSL
30 JUNE 81 1230 HRS MDT
ASCENSION NO. 1

MANDATORY LEVELS
181032N001
LAHA

GEODETIC COORDINATES
33.13510 LAT DEG
106.15446 LON DEG

TABLE 8

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS
850.0	5010.	24.1	14.5	55.	200.9	7.3
800.0	6740.	19.3	13.7	70.	211.9	12.5
750.0	8552.	14.1	12.7	91.	187.1	15.3
700.0	10456.	11.4	6.9	74.	166.1	18.3
650.0	12481.	7.7	3.8	76.	162.5	10.4
600.0	14613.	-3.1	-6.8	76.	157.7	16.5
550.0	16887.	-1.1	-3.4	84.	148.7	12.5
500.0	19378.	-3.6	-9.8	62.	139.9	7.4
450.0	22092.	-8.2	-17.7	46.	114.4	6.2
400.0	25065.	-13.7	-21.0	54.	126.3	6.0
350.0	28358.	-19.9	-28.5	46.	100.5	11.2
300.0	32049.	-28.5	-40.6	30.	151.0	11.0
250.0	36246.	-38.8			177.3	10.9
200.0	41134.	-51.7				

STATION ALTITUDE 4186.74 FEET MSL
30 JUNE 61 1325 HRS MDT
ASCENSION NO. 1

SIGNIFICANT LEVEL DATA
18102H0001
RITA

GEODETIC COORDINATES
33.18295 LAT DEG
106.15114 LON DEG

TABLE 9

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT
875.3	4186.7	29.7	15.8	43.0
850.0	5039.6	24.1	14.5	55.0
790.4	7114.9	18.9	12.2	65.0
741.6	8902.1	14.0	9.4	74.0
700.0	10495.9	10.1	6.0	87.0
648.2	12591.1	6.9	4.2	83.0
626.6	13504.8	4.3	2.7	89.0
612.6	14109.9	3.3	2.3	93.0
577.2	15692.5	.6	-3.1	76.0
560.0	16491.2	-.3	-2.5	85.0
526.4	18114.4	-3.0	-4.1	92.0
518.0	18533.8	-3.6	-4.7	92.0
509.8	18949.5	-3.4	-4.5	92.0
500.0	19453.2	-5.5	-10.8	66.0
485.8	20195.2	-7.0	-15.9	49.0
474.6	20793.6	-7.4	-13.6	61.0
462.0	21481.2	-9.1	-19.9	41.0
454.4	21903.2	-9.6	-20.5	41.0
449.7	22167.5	-9.5	-20.8	39.0
446.6	22343.2	-9.9	-21.5	38.0
431.4	23219.4	-11.6	-25.3	31.0
416.6	24098.4	-12.4	-28.7	24.0
400.0	25117.1	-14.2	-32.2	20.0
373.0	26949.1	-18.0	-32.4	27.0
359.0	27786.2	-20.3	-31.4	36.0
345.4	28726.7	-20.9	-41.3	14.0
319.0	30645.8	-24.8	-45.8	12.0
300.0	32105.3	-28.6	-48.9	12.0
287.6	33095.2	-31.4		
270.0	34557.3	-34.8		
252.6	36077.4	-38.4		

STATION ALTITUDE 4186.74 FEET MSL
30 JUNE 81 1325 HRS MDT
ASCENSION NO. 1

UPPER AIR DATA
1.10210001
RITA

GEODETIC COORDINATES
33.18295 LAT DEG
106.15114 LON DEG

TABLE 10

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEW POINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
4186.7	875.3	29.7	15.8	43.0	994.8	680.6	270.0	7.0	1.000297
4500.0	865.9	27.6	15.4	47.4	995.2	678.3	249.7	6.4	1.000295
5000.0	851.2	24.4	14.6	54.4	989.3	674.5	217.8	7.3	1.000292
5500.0	836.4	22.9	14.0	57.2	976.9	672.8	197.5	9.8	1.000287
6000.0	821.9	21.7	13.5	59.6	964.1	671.3	186.2	13.0	1.000282
6500.0	807.6	20.4	12.9	62.0	951.6	669.9	185.7	13.4	1.000278
7000.0	793.6	19.2	12.3	64.4	939.2	668.4	186.0	13.5	1.000273
7500.0	779.6	17.8	11.6	66.9	927.1	666.8	184.7	14.3	1.000268
8000.0	765.8	16.5	10.9	69.5	915.2	665.1	183.4	15.3	1.000263
8500.0	752.3	15.1	10.1	72.0	903.5	663.5	180.5	16.3	1.000258
9000.0	739.0	13.8	9.4	74.8	891.8	661.9	177.6	17.3	1.000253
9500.0	725.7	12.5	9.0	78.9	879.6	660.5	175.5	17.0	1.000249
10000.0	712.7	11.3	8.5	83.0	867.6	659.0	173.1	16.3	1.000245
10500.0	699.9	10.1	8.0	87.0	855.8	657.6	170.8	15.5	1.000242
11000.0	687.2	9.3	7.1	86.0	842.7	656.6	168.4	14.7	1.000236
11500.0	674.7	8.6	6.2	85.1	829.9	655.6	165.7	14.9	1.000230
12000.0	662.4	7.8	5.3	84.1	817.2	654.7	159.1	15.1	1.000225
12500.0	650.4	7.0	4.4	83.2	804.7	653.7	153.6	15.2	1.000220
13000.0	638.4	5.7	3.5	85.7	793.6	652.1	151.3	15.3	1.000215
13500.0	626.7	4.3	2.7	89.0	783.3	650.4	154.9	15.3	1.000211
14000.0	615.1	3.5	2.3	92.3	771.2	649.4	158.5	15.3	1.000208
14500.0	603.7	2.6	1.0	88.8	759.4	648.3	162.0	15.4	1.000202
15000.0	592.4	1.8	-.7	83.4	747.9	647.2	163.5	15.1	1.000196
15500.0	581.4	.9	-2.5	78.1	736.5	646.0	162.6	14.3	1.000190
16000.0	570.5	.3	-2.9	79.5	724.6	645.2	161.5	13.5	1.000187
16500.0	559.8	-.3	-2.5	85.0	712.3	644.6	160.0	12.9	1.000185
17000.0	549.2	-1.1	-3.0	87.2	701.1	643.6	158.5	12.5	1.000181
17500.0	538.9	-2.0	-3.5	89.4	690.0	642.6	157.0	12.2	1.000178
18000.0	528.7	-2.8	-4.0	91.5	679.1	641.6	154.1	12.3	1.000175
18500.0	518.7	-3.6	-4.7	92.0	668.1	640.7	149.7	12.7	1.000171
19000.0	508.8	-3.6	-5.1	89.4	658.6	640.0	147.7	13.5	1.000168
19500.0	499.1	-5.6	-11.1	64.9	648.5	637.9	146.6	13.8	1.000158
20000.0	489.5	-6.6	-14.5	53.5	638.8	636.5	149.9	13.0	1.000153
20500.0	480.1	-7.2	-14.7	55.1	627.9	635.8	154.6	11.7	1.000150
21000.0	470.8	-7.9	-15.3	55.0	617.4	634.9	159.9	10.2	1.000148
21500.0	461.7	-9.1	-19.9	41.0	606.5	633.3	162.2	8.8	1.000142
22000.0	452.7	-9.6	-20.5	40.3	597.7	632.8	160.6	8.1	1.000140
22500.0	443.8	-10.2	-22.1	36.7	587.5	632.0	152.6	8.2	1.000137
23000.0	435.2	-11.2	-24.3	32.8	577.2	630.3	147.6	8.7	1.000133
23500.0	426.6	-11.9	-26.3	28.8	568.4	629.9	143.6	9.3	1.000131

STATION ALTITUDE 4186.74 FEET MSL
30 JUNE 81 1325 HRS MDT
ASCENSION NO. 1

UPPER AIR DATA
1810210001
RITA

TABLE 10 CON'T

GEODETIC COORDINATES
33.18295 LAT DEG
106.15114 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
24000.0	418.2	-12.3	-28.3	24.8	556.3	629.4	141.5	9.9	1.000128
24500.0	410.0	-13.1	-30.1	22.4	549.0	628.4	140.2	10.2	1.000125
25000.0	401.9	-14.0	-31.8	20.5	540.0	627.3	139.5	10.2	1.000123
25500.0	393.9	-15.0	-32.1	21.5	531.4	626.0	144.7	9.3	1.000121
26000.0	386.0	-16.1	-32.1	23.6	523.0	624.7	150.7	8.5	1.000119
26500.0	378.3	-17.2	-32.2	25.6	514.7	623.3	154.4	8.0	1.000117
27000.0	370.7	-18.4	-32.1	28.4	506.7	622.0	156.5	9.2	1.000115
27500.0	363.2	-19.6	-31.6	33.3	498.8	620.5	159.1	11.3	1.000114
28000.0	355.9	-20.4	-33.1	31.0	490.4	619.4	161.9	13.3	1.000111
28500.0	348.6	-20.8	-38.1	19.3	481.1	619.0	161.8	13.4	1.000108
29000.0	341.5	-21.5	-41.9	13.7	472.6	618.1	158.4	13.2	1.000106
29500.0	334.5	-22.5	-43.1	13.2	464.8	616.9	153.7	12.8	1.000104
30000.0	327.7	-23.5	-44.3	12.7	457.1	615.6	147.3	12.2	1.000103
30500.0	320.9	-24.5	-45.5	12.2	449.6	614.3	139.8	12.1	1.000101
31000.0	314.3	-25.7	-46.6	12.0	442.4	612.8	132.5	12.3	1.000099
31500.0	307.7	-27.0	-47.7	12.0	435.5	611.2	131.3	12.7	1.000097
32000.0	301.3	-28.3	-49.7	12.0	428.7	609.6	135.2	12.6	1.000096
32500.0	295.0	-29.7	-54.1	7.2**	422.1	607.8	142.0	12.4	1.000094
33000.0	288.8	-31.1	-68.9	1.2**	415.7	606.1	145.9	11.8	1.000093
33500.0	282.6	-32.3			408.8	604.5	148.1	10.9	1.000091
34000.0	276.6	-33.5			402.1	603.1	154.1	10.1	1.000090
34500.0	270.7	-34.7			395.4	601.6	164.2	10.1	1.000088
35000.0	264.8	-35.8			388.8	600.1	183.8	10.6	1.000087
35500.0	259.1	-37.0			382.2	598.6			1.000085
36000.0	253.5	-38.2			375.8	597.1			1.000084

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4186.74 FEET MSL
30 JUNE 81 1325 HRS MDT
ASCENSION NO. 1

MANDATORY LEVELS
16102109001
RI1A

GEODETIC COORDINATES
33.18295 LAT DEG
106.15114 LON DEG

TABLE 11

PRESSURE	GEOPOTENTIAL	TEMPERATURE		REL.HUM.	WIND DATA	
		AIR	DEWPOINT		DIRECTION	SPEED
MILLIBARS	FEET	DEGREES CENTIGRADE		PERCENT	DEGREES(TN)	KNOTS
850.0	5036.	24.1	14.5	55.	215.8	7.5
800.0	6768.	19.8	12.6	63.	185.9	13.4
750.0	8581.	14.9	10.0	72.	180.0	16.5
700.0	10486.	10.1	8.0	87.	170.9	15.5
650.0	12503.	7.0	4.4	83.	153.5	15.2
600.0	14648.	2.4	.4	87.	163.1	15.5
550.0	16944.	-1.1	-3.0	87.	158.6	12.5
500.0	19427.	-5.5	-10.8	66.	146.5	13.9
450.0	22118.	-9.5	-20.8	39.	157.9	8.1
400.0	25076.	-14.2	-32.2	20.	140.2	10.1
350.0	28354.	-20.7	-37.0	22.	161.8	13.4
300.0	32042.	-28.6	-48.9	12.	136.7	12.6

SIGNIFICANT LEVEL DATA

STATION ALTITUDE 4173.44 FEET MSL
30 JUNE 81 1600 HRS MDT
ASCENSION NO. 3

18103Z0003
LAMA

GEODETIC COORDINATES
33.13510 LAT DEG
106.15446 LON DEG

TABLE 12

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	DEWPOINT	REL.HUM. PERCENT
873.7	4173.4	25.9	17.5	60.0
867.8	4368.6	21.9	15.5	67.0
850.0	4960.0	20.6	15.2	71.0
817.4	6071.6	19.6	14.0	70.0
783.4	7270.6	16.5	13.2	81.0
748.4	8547.7	14.0	11.0	82.0
700.0	10394.3	10.1	8.7	91.0
648.0	12494.7	5.9	4.7	92.0
597.4	14676.8	3.0	-1.0	75.0
570.4	15906.5	1.1	-2.3	78.0
534.8	17612.7	.5	-2.8	83.0
519.0	18404.4	-.5	-3.9	78.0
500.0	19381.1	-3.6	-7.5	74.0
493.8	19705.4	-4.4	-8.8	71.0
482.2	20321.1	-5.4	-10.2	69.0
477.2	20589.7	-6.9	-11.8	68.0
457.8	21651.2	-9.4	-14.5	66.0
442.2	22531.2	-10.8	-16.4	63.0
400.0	25047.1	-15.5	-22.0	57.0
349.2	28380.7	-21.9	-30.1	47.0
343.2	28800.2	-22.5	-30.9	46.0
303.8	31706.1	-29.7	-38.4	42.0
300.0	32001.4	-30.1	-39.5	39.0
250.0	36189.4	-40.0	-49.0	37.0
227.6	38279.4	-44.8		
206.8	40369.1	-49.6		
200.0	41087.3	-51.6		
191.8	41977.5	-54.1		

UPPER AIR DATA

STATION ALTITUDE 4173.44 FEET MSL
30 JUNE 61 1600 HRS MDT
ASCENSION NO. 3

1N10320003
LANA

GEODETIC COORDINATES
33.13510 LAT DEG
106.15446 LON DEG

TABLE 13

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
4173.4	873.7	25.9	17.5	60.0	1008.9	676.6	60.0	15.0	1.000310
4500.0	863.8	21.6	15.4	67.9	1013.1	671.4	63.0	13.3	1.000302
5000.0	848.8	20.6	15.1	71.0	999.0	670.2	69.2	10.8	1.000298
5500.0	834.0	20.1	14.6	70.5	983.2	669.7	79.1	8.5	1.000292
6000.0	819.5	19.7	14.1	70.1	967.7	669.1	105.1	4.5	1.000287
6500.0	805.1	18.5	13.8	73.9	954.6	667.8	167.5	4.2	1.000283
7000.0	790.9	17.2	13.4	78.5	942.0	666.3	205.3	8.6	1.000279
7500.0	777.0	16.1	12.8	81.2	929.2	664.9	206.5	11.7	1.000274
8000.0	763.2	15.1	11.9	81.6	916.1	663.7	199.9	12.6	1.000268
8500.0	749.7	14.1	11.1	82.0	903.1	662.5	191.2	13.0	1.000262
9000.0	736.2	13.0	10.4	84.2	890.4	661.2	182.1	13.4	1.000257
9500.0	723.0	12.0	9.8	86.6	877.7	659.9	178.7	14.8	1.000252
10000.0	710.1	10.9	9.2	89.1	865.3	658.7	176.4	16.3	1.000248
10500.0	697.3	9.9	8.5	91.1	853.1	657.4	172.9	16.3	1.000243
11000.0	684.6	8.9	7.5	91.3	840.7	656.1	169.6	16.2	1.000237
11500.0	672.1	7.9	6.6	91.5	828.6	654.9	168.5	15.4	1.000231
12000.0	659.9	6.9	5.6	91.8	816.6	653.6	168.7	14.6	1.000226
12500.0	647.9	5.9	4.7	92.0	804.8	652.4	173.1	14.2	1.000221
13000.0	635.9	5.2	3.4	88.1	792.1	651.5	176.2	14.5	1.000215
13500.0	624.2	4.6	2.1	84.2	779.6	650.6	178.1	15.1	1.000209
14000.0	612.7	3.9	.8	80.3	767.3	649.7	178.8	15.1	1.000203
14500.0	601.3	3.2	-.5	76.4	755.2	648.9	179.9	15.1	1.000197
15000.0	590.2	2.5	-1.3	75.8	743.2	648.0	182.1	15.4	1.000193
15500.0	579.2	1.7	-1.9	77.0	731.5	647.0	183.4	15.5	1.000190
16000.0	568.4	1.1	-2.3	78.3	719.8	646.2	183.8	15.4	1.000186
16500.0	557.8	.9	-2.2	79.7	708.5	646.1	183.7	15.3	1.000184
17000.0	547.3	.7	-2.1	81.2	697.7	645.9	183.2	15.3	1.000181
17500.0	537.1	.5	-2.1	82.7	687.1	645.7	182.7	15.3	1.000178
18000.0	527.0	.0	-2.9	80.6	676.7	645.0	182.2	15.4	1.000174
18500.0	517.1	-.8	-4.2	77.6	666.3	644.0	181.6	15.5	1.000170
19000.0	507.3	-2.4	-6.1	75.6	656.9	642.0	180.5	15.3	1.000165
19500.0	497.7	-3.9	-8.0	72.9	647.3	640.1	179.4	15.0	1.000161
20000.0	488.2	-4.9	-9.5	70.0	638.5	638.8	179.6	14.1	1.000157
20500.0	478.9	-6.4	-11.2	68.3	629.1	636.9	180.3	12.9	1.000153
21000.0	469.6	-7.9	-12.9	67.2	619.5	635.1	179.8	11.6	1.000149
21500.0	460.5	-9.0	-14.2	66.3	610.4	633.6	178.5	10.2	1.000146
22000.0	451.6	-10.0	-15.3	64.8	599.7	632.5	178.4	9.7	1.000143
22500.0	442.7	-10.8	-16.4	63.1	589.9	631.5	178.3	9.7	1.000140
23000.0	434.0	-11.7	-17.5	61.9	577.5	630.0	177.3	10.2	1.000137
23500.0	425.4	-12.6	-18.6	60.7	568.1	629.2	176.0	11.0	1.000134

STATION ALTITUDE 4173.44 FEET MSL
30 JUNE 81 1600 HRS MDT
ASCENSION NO. 3

UPPER AIR DATA
18103▒0003
LANA

GEODETIC COORDINATES
33.13510 LAT DEG
106.15446 LON DEG

TABLE 13 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
24000.0	417.1	-13.5	-19.7	59.5	559.0	626.1	162.5	11.5	1.000132
24500.0	406.8	-14.5	-20.8	58.3	550.0	626.9	169.1	12.0	1.000129
25000.0	400.8	-15.4	-21.9	57.1	541.1	625.7	171.5	11.6	1.000127
25500.0	392.7	-16.4	-23.1	55.6	532.3	624.6	172.6	11.1	1.000124
26000.0	384.8	-17.3	-24.3	54.1	523.5	623.4	171.1	10.4	1.000122
26500.0	377.0	-18.3	-25.6	52.6	514.9	622.2	170.9	9.9	1.000119
27000.0	369.4	-19.2	-26.8	51.1	506.5	621.0	170.9	9.4	1.000117
27500.0	362.0	-20.2	-28.0	49.6	498.2	619.8	170.6	9.5	1.000115
28000.0	354.7	-21.2	-29.2	48.1	490.0	618.6	170.6	9.4	1.000112
28500.0	347.5	-22.1	-30.3	46.7	481.9	617.5	170.9	9.1	1.000110
29000.0	340.3	-23.0	-31.4	45.7	473.7	616.3	170.6	8.9	1.000108
29500.0	333.3	-24.2	-32.7	45.0	466.2	614.8	170.6	9.3	1.000106
30000.0	326.3	-25.5	-34.0	44.3	458.8	613.2	170.8	10.6	1.000104
30500.0	319.6	-26.7	-35.3	43.7	451.6	611.7	170.6	12.1	1.000102
31000.0	312.9	-28.0	-36.6	43.0	444.5	610.1	170.4	13.5	1.000101
31500.0	306.4	-29.2	-37.9	42.3	437.5	608.6	170.9	14.3	1.000099
32000.0	300.0	-30.1	-39.5	39.0	429.9	607.4	171.8	14.7	1.000097
32500.0	293.6	-31.3	-40.6	38.8	422.7	605.9	174.1	15.0	1.000095
33000.0	287.2	-32.5	-41.8	38.5	415.7	604.5	176.6	16.3	1.000094
33500.0	281.1	-33.6	-42.9	38.3	408.7	603.0	180.0	16.8	1.000092
34000.0	275.0	-34.8	-44.1	38.0	401.9	601.5	184.9	16.3	1.000090
34500.0	269.1	-36.0	-45.2	37.8	395.2	600.0	187.7	16.1	1.000089
35000.0	263.3	-37.2	-46.3	37.6	388.7	598.5	187.7	16.1	1.000087
35500.0	257.6	-38.4	-47.5	37.3	382.2	597.0	183.6	16.0	1.000086
36000.0	252.1	-39.6	-48.6	37.1	375.9	595.5	180.5	14.6	1.000084
36500.0	246.5	-40.7	-51.0	31.5**	369.5	594.0	175.3	13.2	1.000083
37000.0	241.1	-41.9	-54.8	22.6**	363.1	592.5	166.8	12.2	1.000081
37500.0	235.7	-43.0	-59.7	13.8**	356.8	591.0	155.2	12.2	1.000080
38000.0	230.5	-44.2	-68.1	4.9**	350.6	589.5	150.7	12.3	1.000078
38500.0	225.3	-45.3			344.5	588.0	151.3	12.7	1.000077
39000.0	220.2	-46.5			338.4	586.6	156.1	13.5	1.000075
39500.0	215.2	-47.6			332.4	585.1	159.6	13.7	1.000074
40000.0	210.3	-48.8			326.5	583.6	162.1	13.6	1.000073
40500.0	205.5	-50.0			320.8	582.0	164.0	13.4	1.000071
41000.0	200.8	-51.4			315.4	580.2			1.000070
41500.0	196.2	-52.8			310.1	578.4			1.000069

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4173.44 FEET MSL
30 JUNE 81 1600 HRS MDT
ASCENSION NO. 3

MANDATORY LEVELS
LANA

GEODETIC COORDINATES
33.13510 LAT DEG
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TABLE 14

PRESSURE	GEOPOTENTIAL	TEMPERATURE		REL.HUM.	WIND DATA	
		AIR	DEWPOINT	PERCENT	DIRECTION	SPEED
MILLIBARS	FEET	DEGREES CENTIGRADE			DEGREES(TN)	KNOTS
850.0	4957.	20.6	15.2	71.	68.6	11.0
800.0	6675.	18.0	13.7	76.	196.9	5.7
750.0	8481.	14.1	11.1	82.	191.5	13.0
700.0	10385.	10.1	8.7	91.	173.7	16.3
650.0	12399.	6.1	4.9	92.	172.5	14.3
600.0	14544.	3.2	-.7	76.	180.2	15.1
550.0	16850.	.8	-2.1	81.	183.4	15.3
500.0	19355.	-3.6	-7.5	74.	179.7	15.1
450.0	22055.	-10.1	-15.5	65.	168.0	9.6
400.0	25006.	-15.5	-22.0	57.	171.7	11.6
350.0	28275.	-21.8	-30.0	47.	170.8	9.2
300.0	31939.	-30.1	-39.5	39.	171.8	14.7
250.0	36111.	-40.0	-49.0	37.	179.3	14.0
200.0	40989.	-51.6				